

REMARKS

Claims 10, 11, 14 and 15 have been amended as suggested by the Examiner. The limitations of claim 6 have been incorporated into claim 1. No new matter has been added.

Claim Objections

The Examiner objects to claim 14 as being improper for failing to further limit the subject matter of a previous claim in a dependant claim. The Examiner contends that vinyl norbornane does not satisfy the limitations imposed in claim 4. While not agreeing with the Examiner nor accepting his arguments, Applicants have deleted the reference to vinyl norborane in the claim, thereby obviating the objection.

The Examiner has objected to claim 10 and 15 for lack of antecedent basis in the claims and suggests inserting the word "polypropylene" between "nucleated" and "polymer." Applicants have made the suggested corrections, thereby obviating the objection.

The Examiner has objected to claim 11, for lack of antecedent basis and inconsistent language as compared to parent claim 10. The Examiner has suggested inserting the word "polymer" between "polypropylene" and "composition." The Examiner has also suggested changing the term "process" to "method." Applicants have made the suggested corrections, thereby, obviating the objection.

The Examiner has objected to claim 15 contending that the phrase "the shrinkage of which" does not appropriately attribute the shrinkage feature to the overall colored polymer composition. Applicants have amended the claim to clearly indicate that the shrinkage occurs in the colored polypropylene composition, thereby obviating the objection.

Rejections Under 35 U.S.C § 103

The Examiner has rejected claims 1-15 as obvious over US Patent No. 5,684,099 to Watanabe et al. The Examiner contends that Watanabe et al. relates to compositions comprising polypropylene polymers. He contends that the reference teaches the incorporation of nucleating agents to impart rigidity, heat resistance and impact strength to the polymer and gives examples of preferred nucleating agents used in amounts of 0.05-0.5% by weight. Coloring agents in the amount of 0.01-1% by weight are also taught and examples of suitable coloring agents include carbon black, phthalocyanine, quinacridone, indolin, azo pigments, and titanium dioxide. The Examiner admits that no single embodiment which encompasses all of the claims is given in the reference, but nonetheless contends that it would have been obvious to a skilled artisan to arrive at the instant claims because such an embodiment is adequately provided in the generic disclosure of Watanabe et al.

The Examiner also admits that the reference is silent with respect to the particular physical chemical properties recited in instant claims 1, 3 and 15, but contends that these properties would be inherent because the prior art recites essentially the same composition.

Finally the Examiner also contends that Watanabe et al. teach injection molded or extruded compositions and that there is no indication that the composition of the prior art could not be made into the claimed articles of manufacture. Applicants respectfully traverse.

Applicants first wish to point out that conventional inorganic or organic nucleating agents, e.g. talc, are either too weak to have a dominating effect or can give rise to undesired reactions with the pigments (see the comparative example of the application with talc). Furthermore, the known nucleating agents are hampered by problems relating to agent dispersal. That is, restrictions on food contact approvals might also arise if, for example, NaBz were used (see page 2, lines 21-26).

Although in first paragraph the use of vinyl cycloalkanes as *blends* with polypropylene is mentioned in Watanabe, all of Watanabe's examples use aluminum p-t-butylbenzoate as a nucleating agent. Here, the nucleating agent is used as an "additive," meaning the nucleating agent is added to the polymer by blending with the polymer. Nucleation carried out in this way will very easily result in dispersal problems (non-homogenous dispersion). ✓

The basic idea of the present invention is that the nucleation is carried out by modifying the polymerization catalyst with vinyl compounds and using this modified catalyst for polymerization of propylene, which will result in nucleation of the polymer. The resulting nucleated polymer can then be used as such or as a blend with non-nucleated polymers. This type of nucleation will result in a propylene polymer having a crystallization temperature more than 7°C higher than the corresponding non-nucleated propylene polymer. The very strong nucleation affect achieved by the method can be seen from the high crystallization temperature of the polymer. This high nucleation effect dominates the different nucleation effects of different pigments, which prevents dimensional variations when different pigments are used.

The Declaration submitted by Dr. Mika Härkönen, which is enclosed, speaks to these results. Dr. Härkönen indicates that the Watanabe reference is directed to polymer compositions generated by using a propylene block copolymer composition that has a specific composition of propylene homopolymer and copolymer, but makes no special selections for the type of nucleating agent used. Dr. Härkönen points out that in column 10, lines 36-38, Watanabe teaches that additives such as coloring agents can be added in an amount that does not impair the effect of the composition. Dr. Härkönen also states that further along in column 10, lines 62-64, Watanabe teaches that additives can be added in an amount of 0.01-1 wt %. This teaching suggests to one skilled in the art that additives, such as coloring agents, impair the properties of the polymer if amounts greater than 1.0-wt % are used. That is, the reference teaches away from the instant invention. Dr. Härkönen then goes on to provide experimental results that show that when the instant invention is used, higher amounts of pigments, i.e. up to 5.0-wt %, can be used without impairing the dimensional stability of the product.

how?

includes 0.01-1 range

The Watanabe reference does not disclose a rise in the crystallization temperature of the resulting propylene polymer as compared with the corresponding non-nucleated or a talc-nucleated polymers. In addition, this reference does not speak to the difference in the shrinkage between different coloring agents in the resulting propylene polymer as being much reduced compared to the differences in the non-nucleated or talc-nucleated polymers of the reference. Indeed, according to Dr. Härkönen's Declaration, the Watanabe reference appears to teach those skilled in the art away from adding coloring agents in an amount greater than 1.0 wt %, as discussed above. As shown in his Declaration, good results can be achieved using the instant

invention with amounts of coloring agents up to 5.0 wt %. Thus, Applicants respectfully request reconsideration and removal of the rejection.

The Examiner has rejected claims 1-15 as being unpatentable over US Patent No. 4,551,501 to Shiga et al. in view of Watanabe et al. The Examiner contends that Shiga et al. disclose a polymer composition comprising a blend of crystalline polypropylene and vinyl cycloalkane. The Examiner contends that the inventors contemplated the use of pigment such as carbon black, although a specific amount of pigment is not disclosed for any example. Here, the Examiner points to the Watanabe et al. disclosure regarding the addition of coloring agents in an amount of 0.1-1% by weight. The Examiner concludes that one skilled in the art would have found it obvious to use the same amount of coloring agent in the Shiga et al. composition as taught in Watanabe to produce a colored polypropylene composition. But, as discussed above, Watanabe teaches away from the use of coloring agents in amounts greater than 1 wt.%, which is a feature of the instant invention.

The Examiner goes on to indicate that Shiga et al. also teach the use of vinyl cycloalkanes selected from vinyl cyclopentane, vinyl cyclohexane, vinyl 2-methylcyclohexane and vinyl norbornane, while Watanabe et al. disclose use of carbon black, phthalocyanine, quinacridone, indolin, azo pigments and titanium dioxide as coloring agents. The Examiner contends that in Shiga et al., the vinyl cyclohexane is polymerized first, followed by polymerization of propylene in the presence of vinyl cyclohexane polymer and contends that this process is basically the same as that recited in present claim 6, which results in a polymer blend described in present claim 7. The Examiner then indicates that Watanabe et al. teach injection molding or extrusion

and that since the prior art recites essentially the same compositions the particular physical chemical properties would be identical. Applicants respectfully traverse.

X Applicants first refer to the discussion above concerning the use of the nucleating agent as an "additive." Like Watanabe, Shiga's nucleating agent is added to the polymer by blending with the polymer. The instant invention avoids the problems resulting from this process as discussed above.

Second, the Examiner admits that one of the critical elements missing from Shiga is the amount of coloring agent that must be used. The Examiner has tried to fill this void with the teaching in Watanabe et al. As discussed above and in Dr. Härkönen's Declaration, the Watanabe et al. reference actually teaches away from use of coloring pigments in an amount greater than 1.0 wt %. Thus, the combination of Shiga et al. and Watanabe et al. do not make the instant invention obvious.

In view of the above, Applicants respectfully request reconsideration and removal of the rejection.

In view of the above remarks, all of the claims remaining in the case are submitted as defining non-obvious, patentable subject matter.

The Examiner is respectfully requested to enter this Reply After Final in that it raises no new issues. Alternatively, the Examiner is respectfully requested to enter this Reply After Final in that it places the application in better form for Appeal.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicant respectfully petitions for a two (2) months extension of time for filing a response in connection with the present application and the required fee of \$410.00 is attached hereto.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Leonard R. Svensson (Reg. No. 30,330) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By


Leonard R. Svensson, #30,330

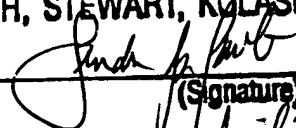
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(Date of deposit)

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(Signature)
April 28, 2003
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